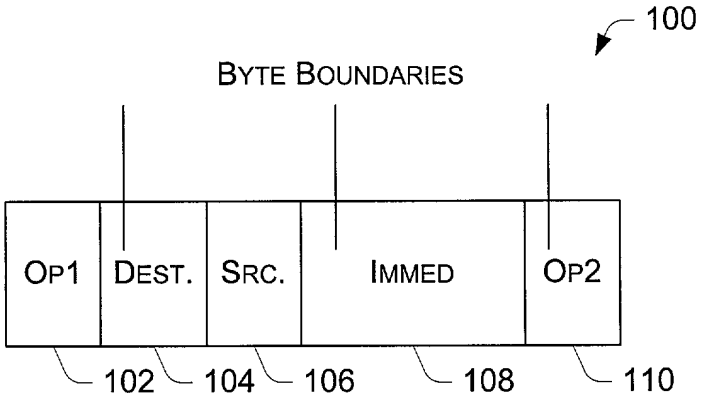

Fig. 1
Prior Art

Microsoft Corporation - Confidential

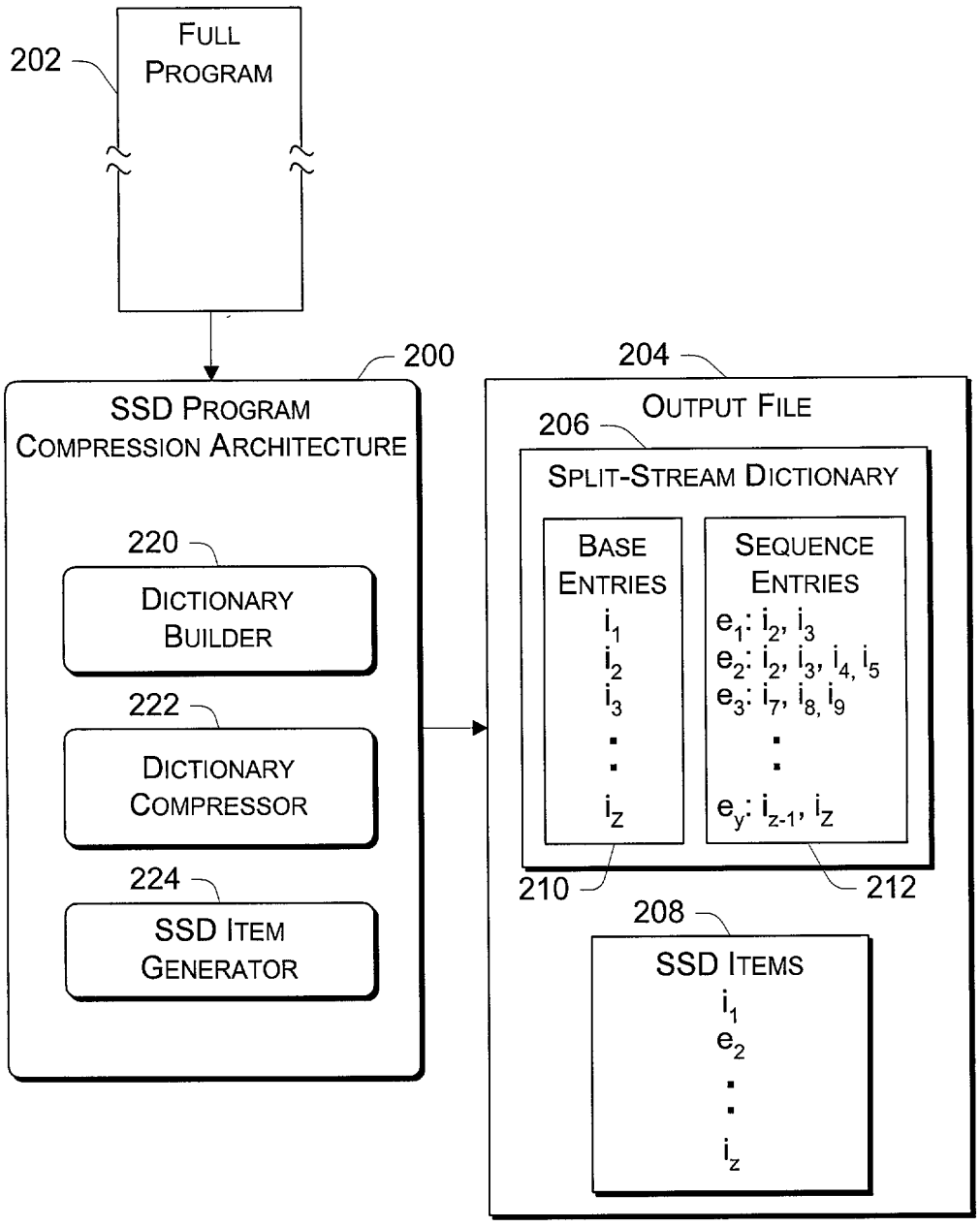
202
FULL PROGRAM
200
SSD PROGRAM COMPRESSION ARCHITECTURE
220
DICTIONARY BUILDER
222
DICTIONARY COMPRESSOR
224
SSD ITEM GENERATOR
204
OUTPUT FILE
206
SPLIT-STREAM DICTIONARY
BASE ENTRIES
i_1
i_2
i_3
i_Z
SEQUENCE ENTRIES
e_1: i_2, i_3
e_2: i_2, i_3, i_4, i_5
e_3: i_7, i_8, i_9
e_y: i_{z-1}, i_Z
210
212
208
SSD ITEMS
i_1
e_2
i_z

Fig. 2

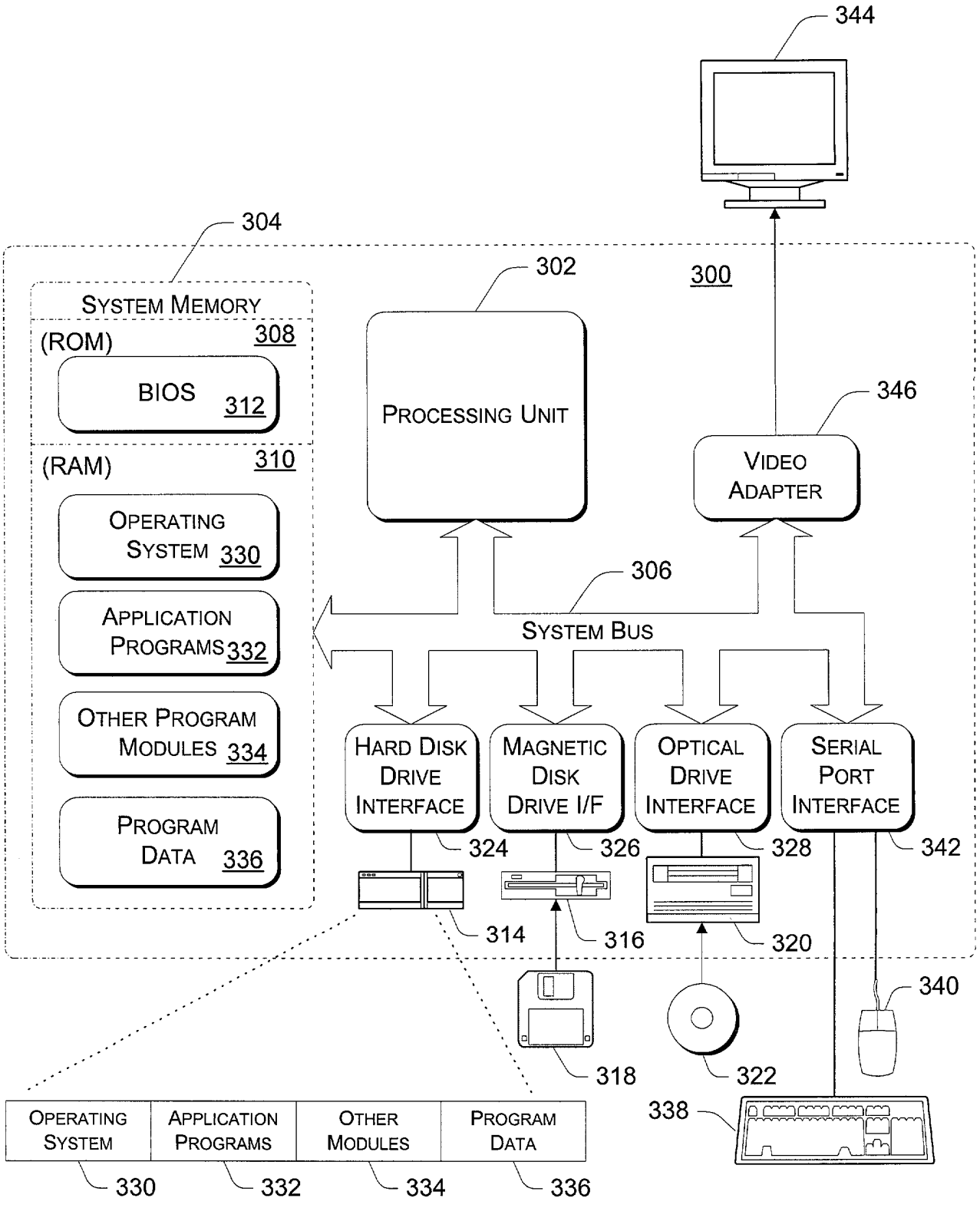
344
304
302
300
SYSTEM MEMORY
(ROM) 308
BIOS 312
(RAM) 310
OPERATING SYSTEM 330
APPLICATION PROGRAMS 332
OTHER PROGRAM MODULES 334
PROGRAM DATA 336
PROCESSING UNIT
346
VIDEO ADAPTER
306
SYSTEM BUS
HARD DISK DRIVE INTERFACE
MAGNETIC DISK DRIVE I/F
OPTICAL DRIVE INTERFACE
SERIAL PORT INTERFACE
324
326
328
342
314
316
320
340
318
322
338
OPERATING SYSTEM
APPLICATION PROGRAMS
OTHER MODULES
PROGRAM DATA
330
332
334
336

Fig. 3

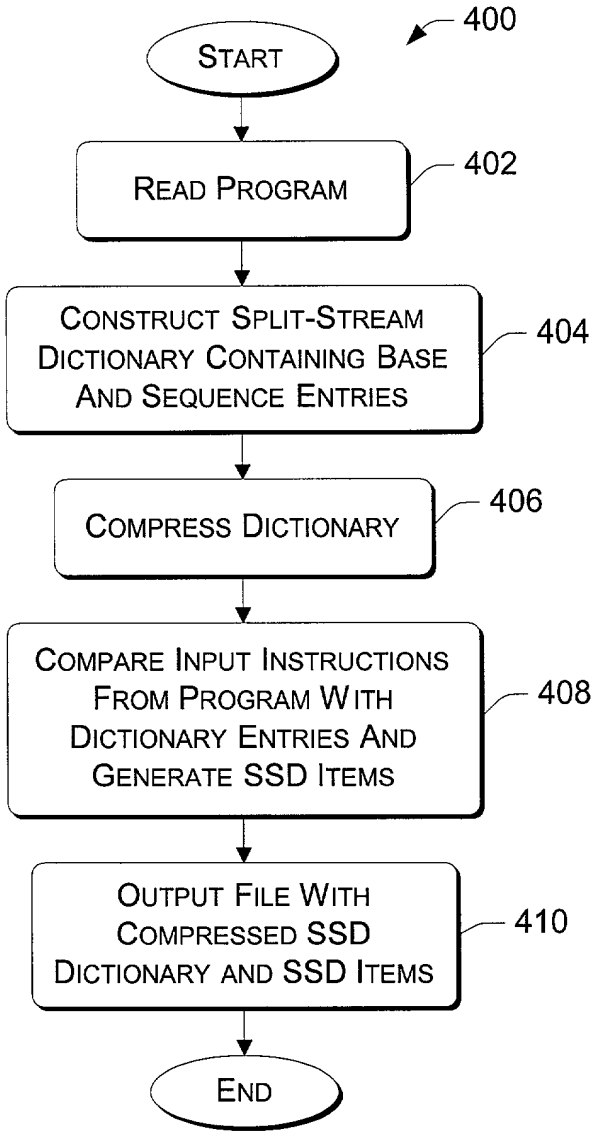
SSD PROGRAM COMPRESSION
400
START
READ PROGRAM
402
CONSTRUCT SPLIT-STREAM DICTIONARY CONTAINING BASE AND SEQUENCE ENTRIES
404
COMPRESS DICTIONARY
406
COMPARE INPUT INSTRUCTIONS FROM PROGRAM WITH DICTIONARY ENTRIES AND GENERATE SSD ITEMS
408
OUTPUT FILE WITH COMPRESSED SSD DICTIONARY AND SSD ITEMS
410
END

Fig. 4

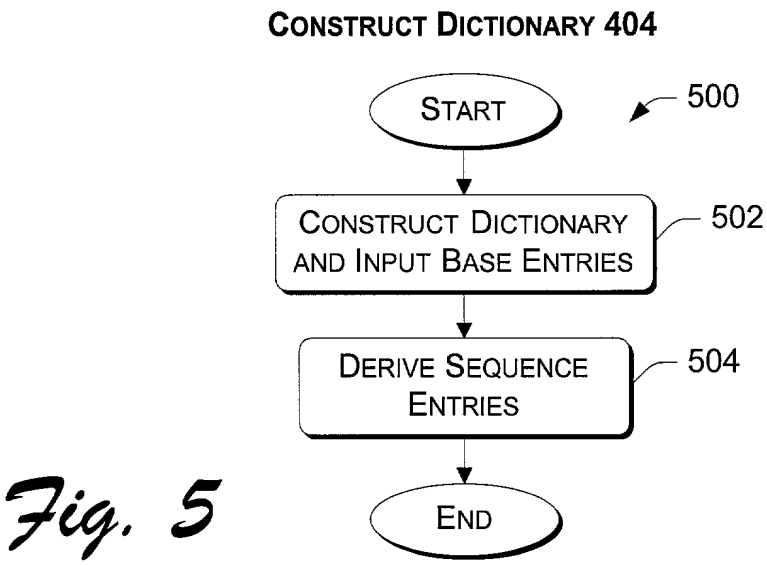

Fig. 5

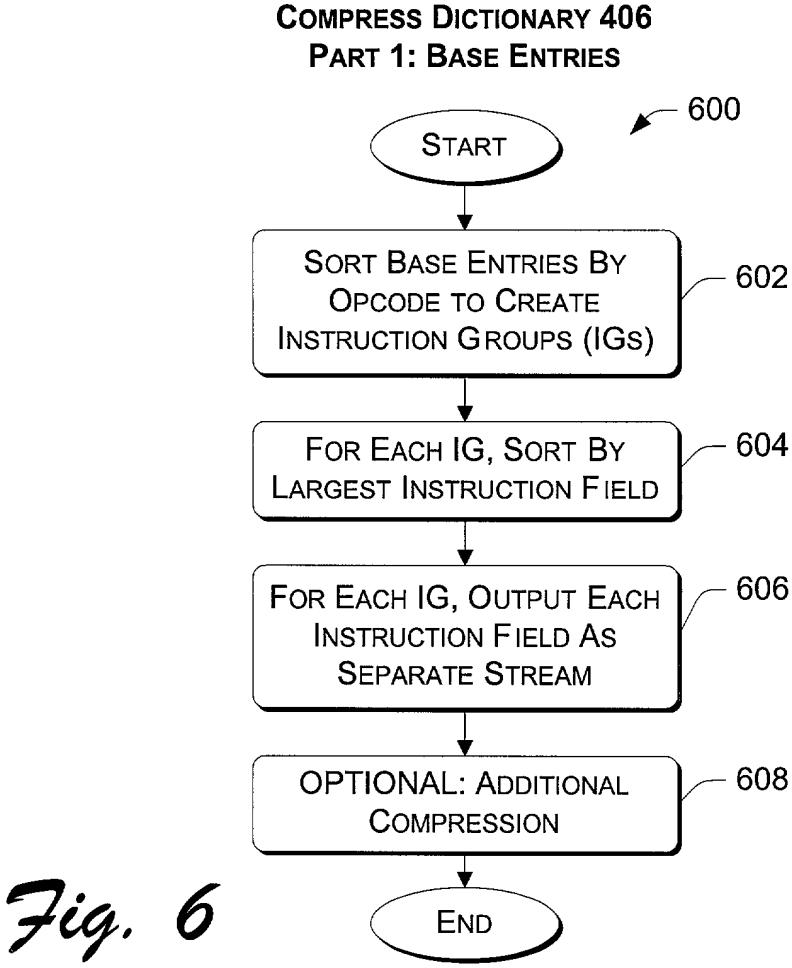

Fig. 6

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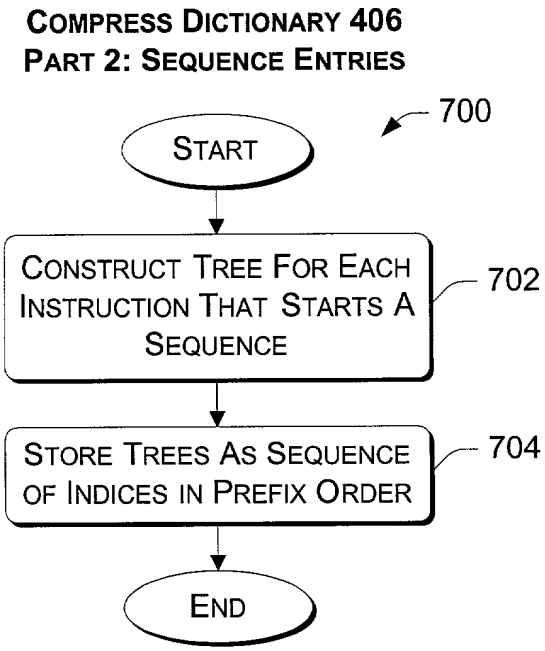
COMPRESS DICTIONARY 406
PART 2: SEQUENCE ENTRIES
700
START
CONSTRUCT TREE FOR EACH INSTRUCTION THAT STARTS A SEQUENCE
702
STORE TREES AS SEQUENCE OF INDICES IN PREFIX ORDER
704
END

Fig. 7

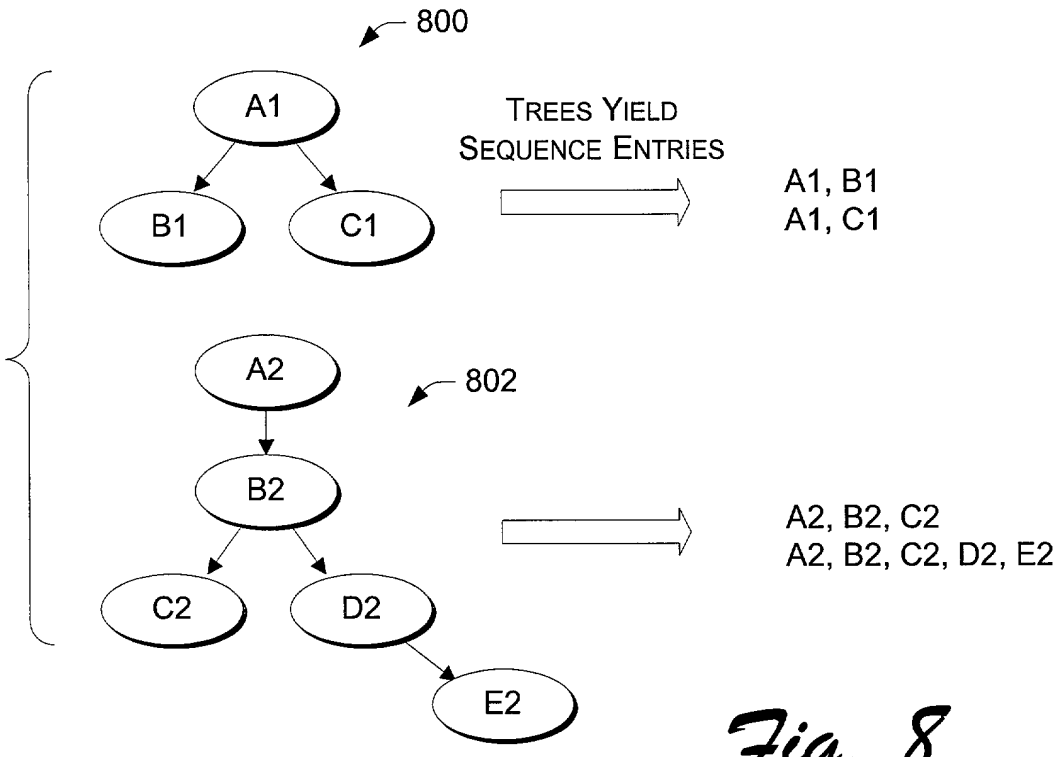
800
A1
B1
C1
TREES YIELD SEQUENCE ENTRIES
A1, B1
A1, C1
A2
802
B2
C2
D2
E2
A2, B2, C2
A2, B2, C2, D2, E2

Fig. 8

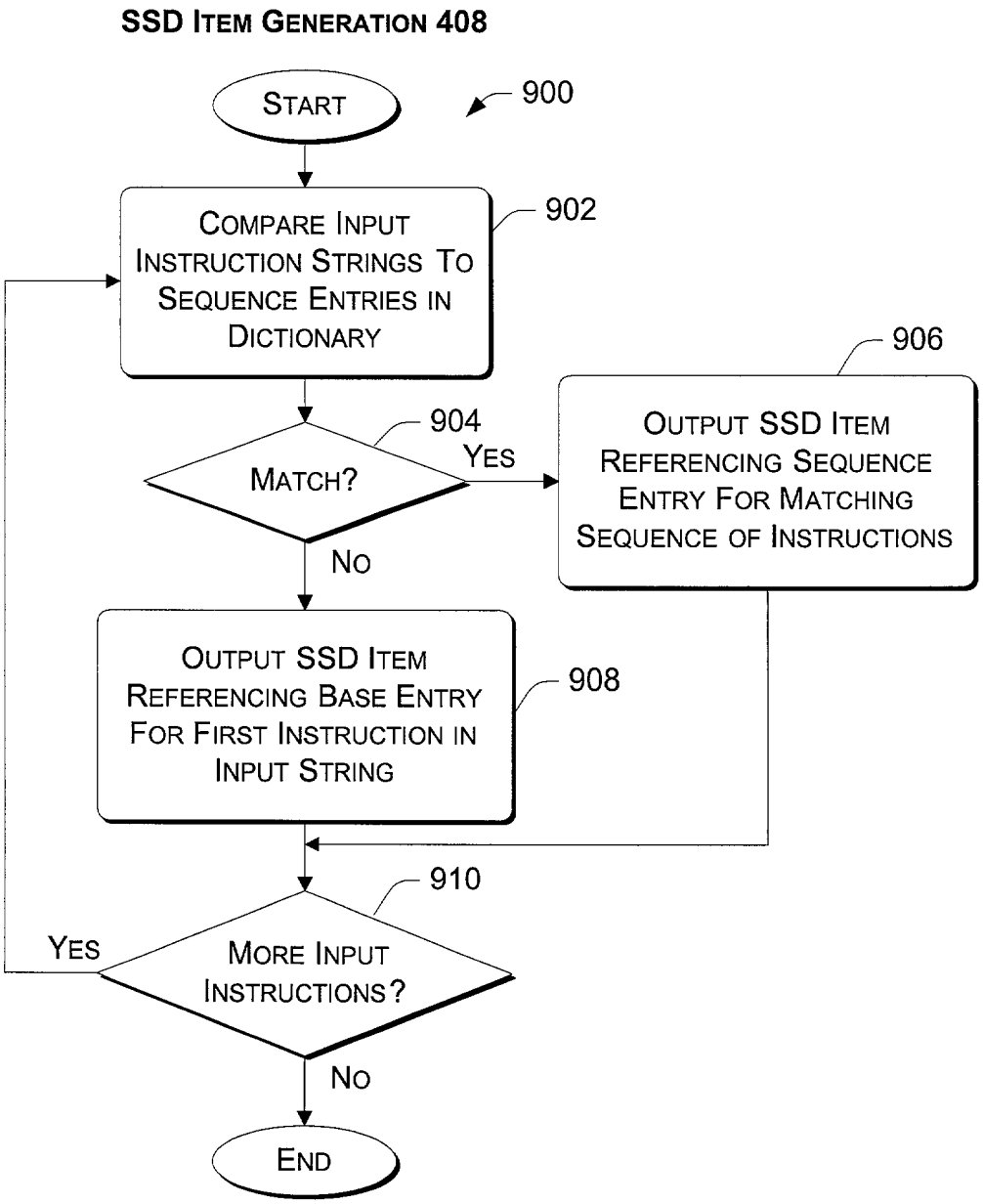
SSD ITEM GENERATION 408
START
900
COMPARE INPUT INSTRUCTION STRINGS TO SEQUENCE ENTRIES IN DICTIONARY
902
MATCH?
904
YES
NO
OUTPUT SSD ITEM REFERENCING SEQUENCE ENTRY FOR MATCHING SEQUENCE OF INSTRUCTIONS
906
OUTPUT SSD ITEM REFERENCING BASE ENTRY FOR FIRST INSTRUCTION IN INPUT STRING
908
MORE INPUT INSTRUCTIONS?
910
YES
NO
END

Fig. 9

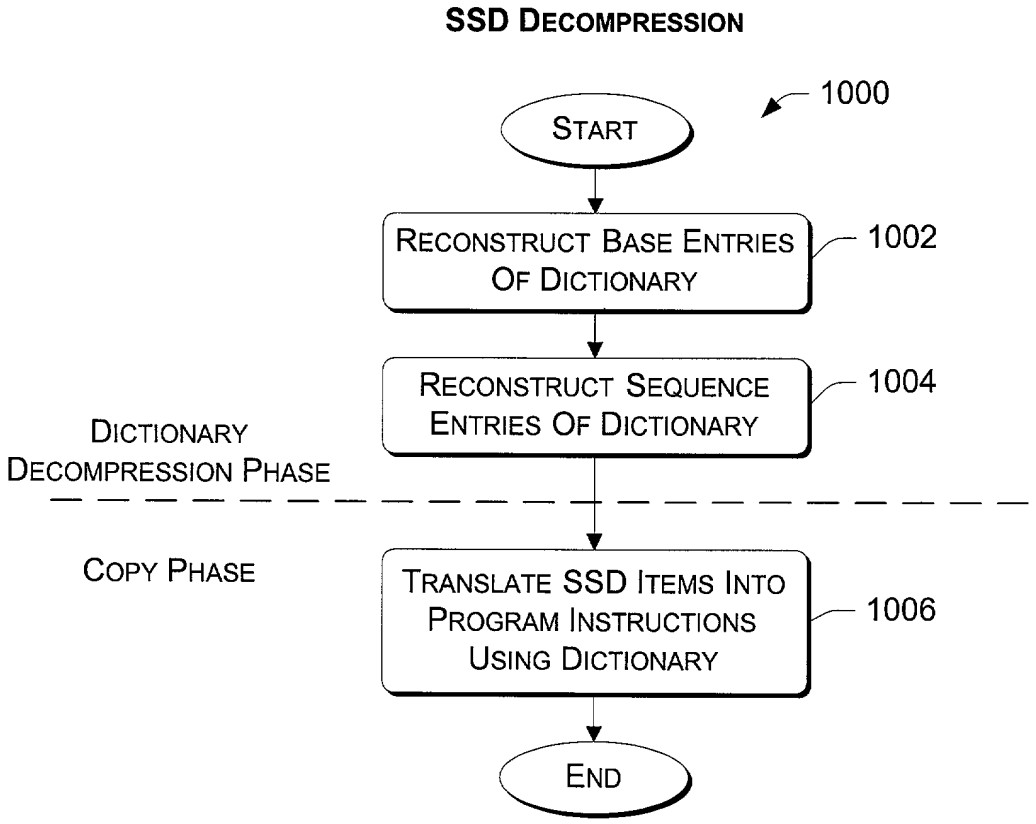
SSD DECOMPRESSION
1000
START
RECONSTRUCT BASE ENTRIES OF DICTIONARY
1002
RECONSTRUCT SEQUENCE ENTRIES OF DICTIONARY
1004
DICTIONARY DECOMPRESSION PHASE
COPY PHASE
TRANSLATE SSD ITEMS INTO PROGRAM INSTRUCTIONS USING DICTIONARY
1006
END

Fig. 10